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UTAH DIVISION OF OIL, GAS AND MINING
STATE DECISION DOCUMENT AND
TECHNICAL ANALYSIS

Soldier Creek Coal Company
Banning Loadout
ACT/007/034
Carbon County, Utah

October 24, 1988

CONTENTS

ADMINISTRATIVE OVERVIEW

Soldier Creek Coal Company
Banning Loadout
ACT/007/034
Carbon County, Utah

BACKGROUND

Soldier Creek Coal Company, a subsidiary of Sun Corporation Inc., has submitted an application for the Banning Loadout facility. The proposed permit area consists of approximately 36 acres of private, state, and federal (managed by the U.S. Bureau of Land Management (BLM)) land, and is located just off of U.S. Highway 6-50 near Sunnyside Junction, Utah.

The loadout has been operated since 1976 by Savage Coal Service Corporation, based upon approval received from the BLM.

Coal is transported to the site from the Soldier Canyon Mine, approximately 19 miles away. Coal transported to the loadout is crushed and sized. A stacking conveyor discharges the coal over a reclaim tunnel which feeds a surge bin above the rail-loading track. The train loading system has a capacity of 3,000 tons per hour.

The remainder of the 21.4 acres of disturbed area which is enclosed by a fence can be used for longer term storage of coal, as economic conditions dictate.

ANALYSIS

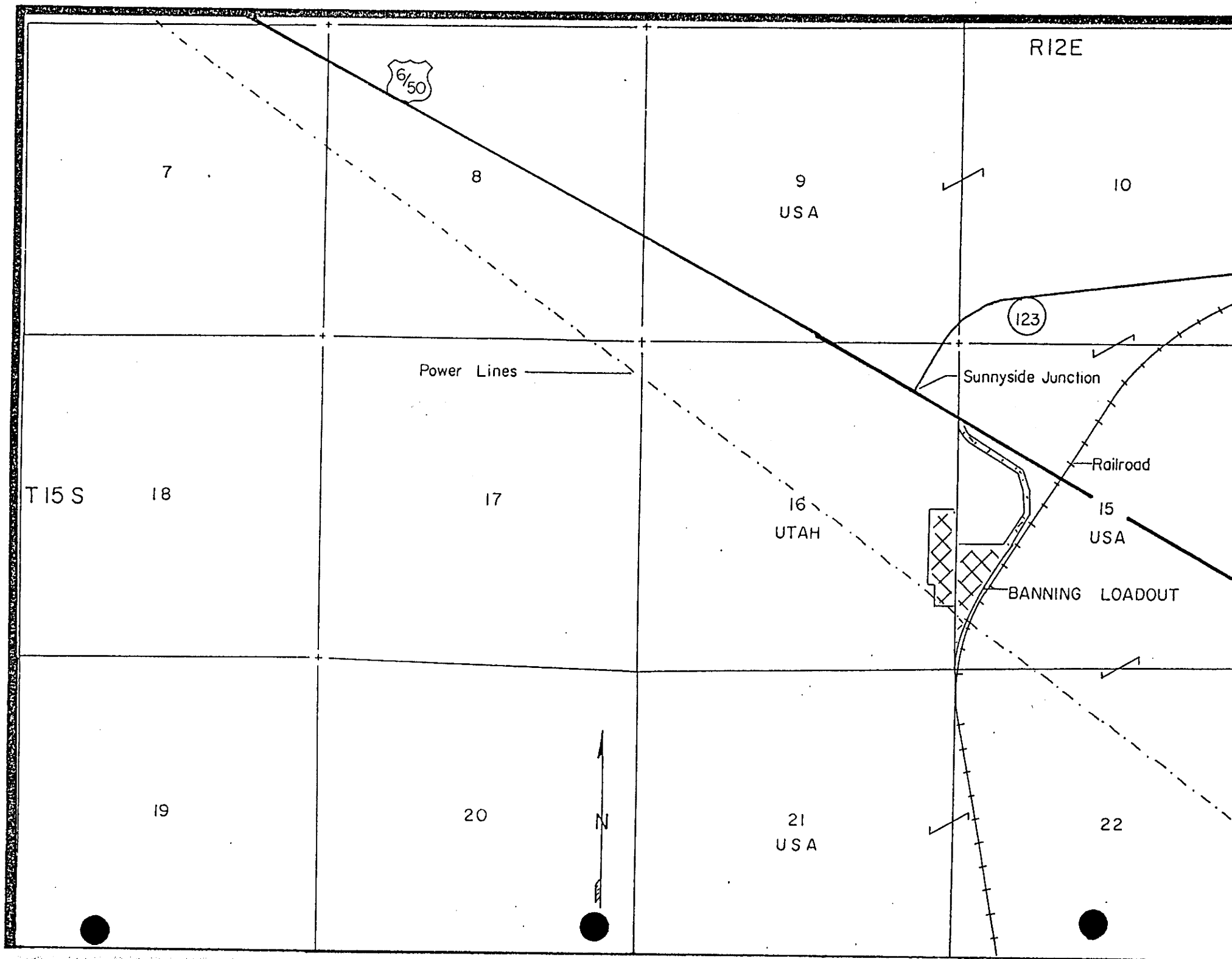
This facility was constructed in 1976, with approval from the BLM. At that time the Surface Mining Control and Reclamation Act (SMCRA) and the corresponding Utah Act (ACT) was not in effect. Even after SMCRA took effect, the facility was not considered to be a "coal mining activity" as defined by the Utah State Program. In January of 1986, the Utah Program was modified so that the type of activity occurring at the Banning Loadout falls under the definition of coal preparation activities covered by SMCRA and the ACT. Since that time Soldier Creek Coal Company has worked diligently with the Division of Oil, Gas and Mining (DOGM) to secure a permanent program mining and reclamation permit for the property. Regular monthly inspections have been conducted at the site since 1986 to insure site compliance with the performance standards of the ACT.

Due to the pre-ACT construction of the facilities there are existing structures on site, no topsoil was saved, and sedimentation controls were not constructed in accordance with the ACT. However, through the permitting process, Soldier Creek Coal Company has demonstrated that the existing structures meet the performance standards and will not harm the environment, public health or safety. In addition, it has been shown that the site can be adequately reclaimed with soil materials available on site. To further demonstrate this, a test plot will be installed. Sedimentation controls will be upgraded, with a pond to be constructed in compliance with the performance standards, as soon as a permit is issued.

RECOMMENDATION

Soldier Creek Coal Company has demonstrated that the Banning Loadout can and will meet the requirements of the ACT and the performance standards. No substantive issues have been raised during the review process by the public or other state or federal agencies. Therefore it is recommended that the Mining and Reclamation Plan (MRP) for the Banning Loadout be approved with the stipulations delineated in Attachment A to the permit. The initial permit term will be five years. Life of the facility is considered to be 30 years.

LOCATION MAP



PERMITTING CHRONOLOGY

Soldier Creek Coal Company
Banning Loadout
ACT/007/034
Carbon County, Utah

1/4/88	Soldier Creek Coal Company (SCCC) submits an application for the Banning Loadout.
5/3/88	Initial Completeness Review (ICR) sent to SCCC.
7/15/88	SCCC submits response to ICR.
7/27/88	Division of Oil, Gas and Mining determines the application to be complete.
8/22/88	Notice published in the Price Sun Advocate for the first time, and continues for the following three weeks.
9/19/88	SCCC submits additional technical information.
9/23/88	Public comment period expires with no comments received.
10/24/88	Decision Document, State Permit issued.

MINE PLAN INFORMATION

Mine Name Banning Loadout State ID: ACT/007/034
Operator Soldier Creek Coal Co. County Carbon
Controlled By Sun Company Inc.
Contact Person(s) Chris Allen Position Mine Engineer

Telephone: (801) 637-6360

New/Existing Existing Mining Method N/A - Preparation Plant

Fed. Lease No.(s) NA

State Lease No. (s) NA

Other Leases (identify) NA

Legal Descriptions

Ownership Data:

Surface Resources (acres)	Existing Permit Area	Proposed Permit Area	Total Life of Mine Area
Federal	24		24
State	10		10
Private	2		2
Other			
TOTAL	36		36

Coal Ownership (Acres)

Federal	NA		
State			
Private			
Other			
TOTAL			

Coal Resource Data	Total Reserves	Total Recoverable Reserves
Federal	NA	
State		
Private		
Other		
TOTAL		

Recoverable Reserve Data	Name	Thickness	Depth
Seam	NA		
Seam			
Seam			
Seam			
Seam			
Seam			

Mine Life 30 Years
Average Annual Production NA Percent Recovery NA
Date Projected Annual Rate Reached NA
Date Production Begins NA Date Production Ends NA
Reserves recoverable by: (1) Surface Mining NA
(2) Underground Mining
Reserves Lost Through Management Decision NA
Coal Market

Modifications that have been approved:	Date

FINDINGS

Soldier Creek Coal Company
Banning Loadoug
ACT/007/034
Carbon County, Utah

1. The plan and the permit application are accurate and complete and all requirements of the Surface Mining Control and Reclamation Act (the "Act"), and the approved Utah State Program have been compiled with (UMC 786.19{a}).

2. The applicant proposes acceptable practices for the reclamation of disturbed lands (MRP, Chapter 3). These practices have been shown to be effective in the short-term; there are no long-term reclamation records utilizing native species in the western United States. Nevertheless, the regulatory authority has determined that reclamation, as required by the Act, can be feasibly accomplished under the Mining and Reclamation Plan (MRP) (UMC 786.19 {b}) (see Technical Analysis (TA) Section UMC 817.111-.117).

3. The assessment of the probable cumulative impacts of all anticipated coal mining and reclamation activities in the general area on the hydrologic balance has been made by the regulatory authority. The Mining and Reclamation Plan proposed under the application has been designed to prevent damage to the hydrologic balance in the permit area and in associated off-site areas (UMC 786.19 {c} and UCA 40-10-11 {2} {c}) (See Cumulative Hydrologic Impact Analysis (CHIA) following this Findings Document).

4. The proposed lands to be included within the permit area are:
    a. not included within an area designated unsuitable for underground coal mining operations (MRP, Section 1.8);

    b. not within an area under study for designated lands unsuitable for underground coal mining operations;

    c. not on any lands subject to the prohibitions or limitations of 30 CFR 761.11{a} (national parks, etc.), 761.11{f} (public buildings, etc.) and 761.11 {g} (cemeteries) (MRP, Section 2.1),

d. within 100 feet of a public road; however, the road was used as a coal haul road by the applicant prior to August 3, 1977, and is therefore subject to a valid existing right (UMC 761.11);

e. not within 300 feet of any occupied dwelling (UMC 786.19{d}).

5. The regulatory authority's issuance of a permit is in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800) (UMC 786.19{e}). (See attached letter from State Historic Preservation Officer (SHPO) dated Janaury 29, 1988).

6. The applicant has the legal right to enter and complete mining and reclamation activities in the permit area through rights-of way and lease agreements (UMC 786.19{f}).

7. A 510(c) report has been run on the Applicant Violator System (AVS), which shows that: prior violations of aplicable laws and regulations have been corrected; neither Soldier Creek Coal Company, or it's parent company are delinquent in payment of fees for the Abandoned Mine Reclamation Fund; and the applicant does not control and has not controlled minng operations with a demonstrated pattern of willful violations of the Act of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with the provisions of the Act (UMC 786.19 {g}, {h} {i} (See OSMRE Relatedness Report, attached to TA).

8. Preparation and reclamation operations to be performed under the permit will not be inconsistent with other operations anticipated to be performed in areas adjacent to the proposed permit area. The only mining property in the vicinity is the Sunnyside Mine (UMC 786.19{j}).

9. A detailed analysis of the proposed bond has been made. The bond estimate is $211,000.00. The regulatory authority has made appropriate adjustments to reflect costs which would be incurred by the state, if it was required to contract the final reclamation activities for the mine site. The bond shall be posted (UMC 786.19{k}) with the regulatory authority prior to final permit issuance.

10. No lands designated as prime farmlands or alluvial valley floors occur on the permit area (UMC 786.19{l}) (See MRP sections 6.4, 6.5 and TA sections 822 and 823).

11. The proposed postmining land-use of the permit area has been approved by the regulatory authority (UMC 786.19{m}) (See TA, Section UMC 817.133).

12. The regulatory authority has made all specific approvals required by the Act, the Cooperative Agreement and the Federal Lands Program (UMC 786.19{n}).

13. The proposed operation will not affect the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats (UMC 786.19{o}) (See MRP Section 8.1).

14. All procedures for public participation required by the Act, and the approved Utah State Program have been compiled with (UMC 786.11-.15).

15. The applicant proposes to use existing structures in connection with the proposed underground coal mining activities. These structures meet the performance standards of the Act and subchapter K and pose no significant harm to the environment or public health or safety (UMC 786.21) (See TA section UMC 817.181).

Susan C. Linner
Permit Supervisor

Lowell P. Braxton 10/20
Administrator, Mineral
Resource Development and
Reclamation Program

Kenneth E. May 10/21
Associate Director, Mining

Dianne R. Nielson
Director

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Soldier Creek Coal Company
Banning Loadout
ACT/007/034
Carbon County, Utah

September 29, 1988

I. Introduction

This is a Cumulative Hydrologic Impact Assessment (CHIA) for Soldier Creek Coal Company's Banning Loadout in Carbon County, Utah. Soldier Creek Coal Company is a subsidiary of Sun Corporation Inc. This assessment analyses the probable cumulative impacts of coal mining, coal storage and coal shipping in the general area and whether the operations proposed under the application have been designed to prevent damage to the hydrologic regime outside the permitted area. This report complies with federal legislation passed under the Surface Mining Control and Reclamation Act (SMCRA) and subsequent Utah and federal regulatory programs under UMC 786.19(c) and 30 CFR 784.14(f).

The loadout is located south of U.S. Highway 6-50 near Sunnyside Junction, Utah (Figure 2). The Banning Loadout will receive, stockpile and load coal that is mined at the Soldier Creek Mine approximately 19 miles northeast of the loadout (Figure 1 and 3). The permit will comprise approximately 36 acres of private, state, and federal (managed by the U.S. Bureau of Land Management (BLM)) land within Section 15 of T15S., R12E.(Figure 2). Approximately 21.4 acres of the disturbed area will be used for long term storage of coal, as economic conditions dictate.

The permit area is located in Clark Valley between the Book Cliffs escarpment and Cedar Mountain, which lies at the northern end of the San Rafael Swell. This area has been designated as the Mancos Shale Lowlands, a physiographic subdivision by Stokes (1986, Page 232, Map 43), delineated by the desert floor of Castle Valley, Clark Valley and Grand Valley. The lowlands are shaped by a few perennial streams and a great number of intermittent and ephemeral washes. The topography reflects an erosive surface with pediments, rugged badlands and narrow flat-bottomed alluvial valleys.

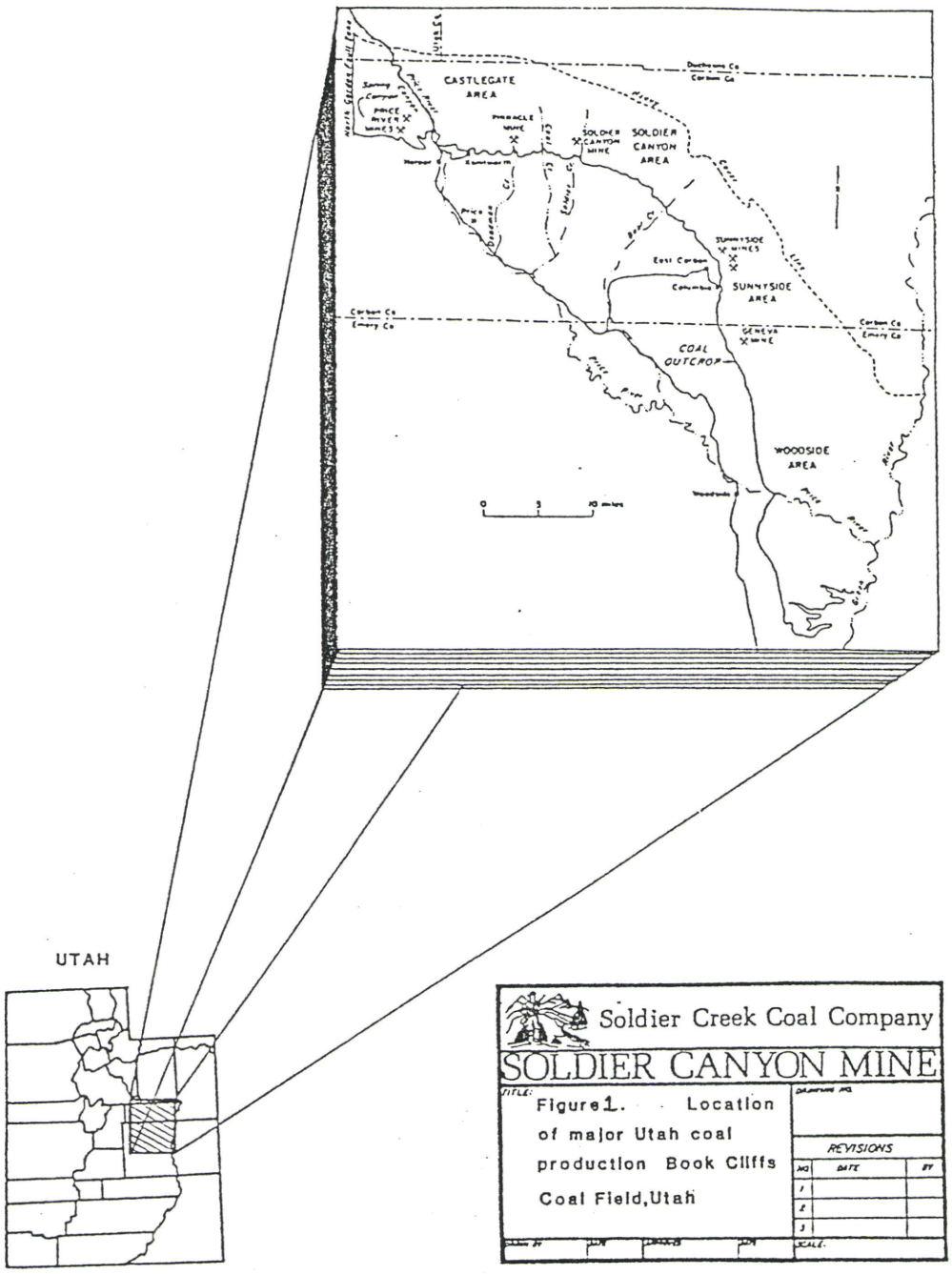

CASTLEGATE AREA
SOLDIER CANYON AREA
SUNNYSIDE AREA
WOODSIDE AREA
COAL OUTCROP
UTAH
Soldier Creek Coal Company
SOLDIER CANYON MINE
Figure 1. Location of major Utah coal production Book Cliffs Coal Field, Utah

Figure 1

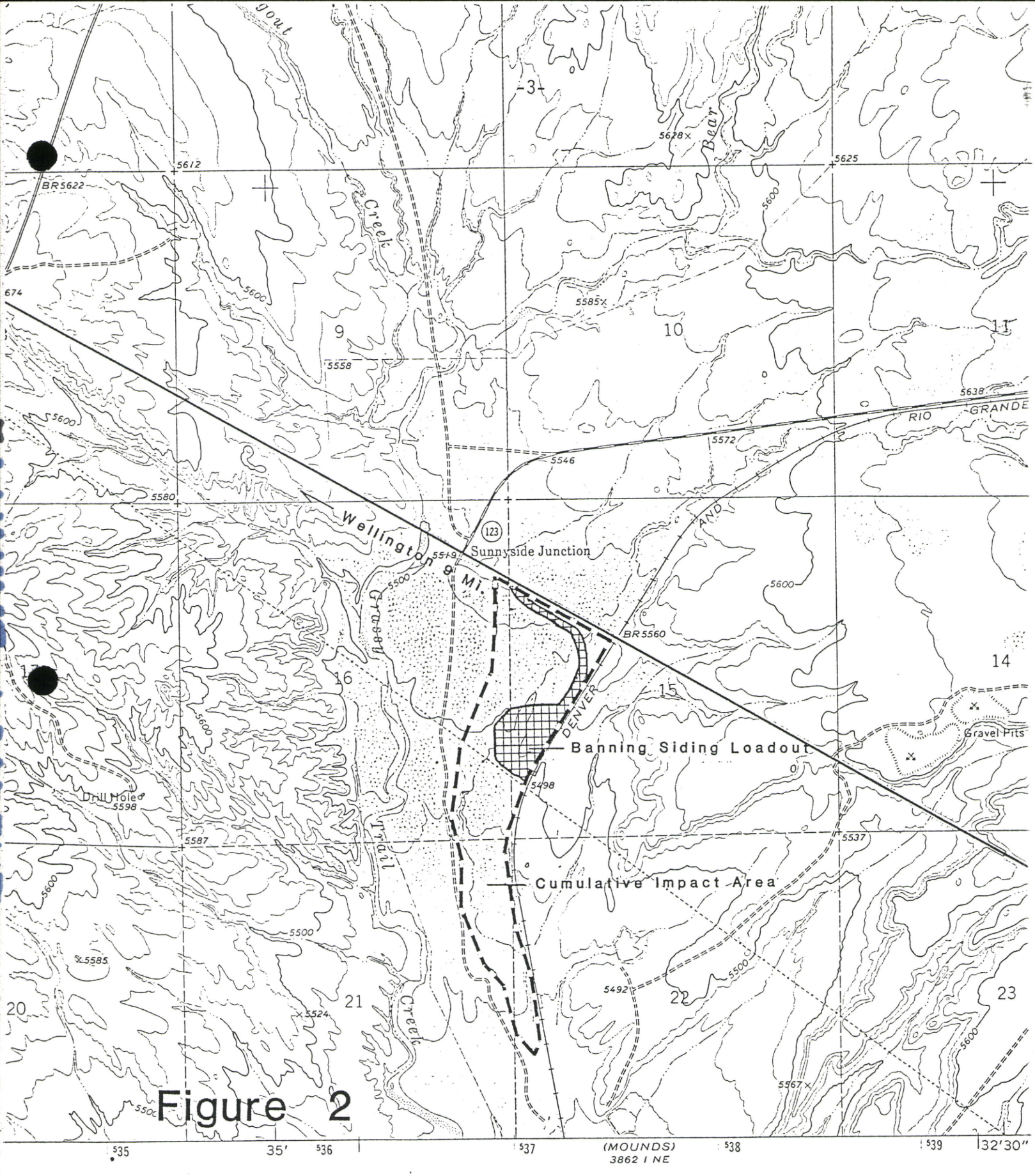


Figure 2

SCALE 1:24 000

1 MILE

7000 FEET

1 KILOMETRE

CONTOUR INTERVAL 20 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

GN MN

0°17'
5 MILS

15°
267 MILS

No oil or gas wells are located within the existing permit area or adjacent areas. The closest wells are located in Sections 18 and 19. These are gas wells operated by Equity Oil Company.

There are no designated prime farmlands or alluvial valley floors in or adjacent to the permit area. No farming has occurred in the past or currently takes place in the vicinity of the permit area.

II. Cumulative Impact Area (CIA)

Figure 2 delineates the CIA for the Banning Siding Loadout. The CIA comprises 167 acres. Elevation of the site is about 5,500 feet above mean sea level.

III. Scope of Operation

The loadout began operation during June of 1976. Coal is hauled to the loadout by double trailer trucks. The coal is then crushed to size and stored at a radial stacker until shipped by rail. The operation currently processes 3,000 tons per hour. Future plans are to increase the loading capacity to 6,000 tons per hour to make the site capable of handling unit trains.

IV. Study Area

A. Geology

The Banning Loadout is constructed on Mancos Shale. The Mancos Shale is generally a thick unit of varying shades and hues of gray carbonaceous and gypsiferous material. It ranges from a fine clay to siltstone. It is nodular or massive in its fresh surface appearance and decrepitates to a soft semi-sterile soil. Precipitation leaches the chemical matter from the shale to form white patches of efflorescences of alkali. Where protected by sandstone units, the Mancos shale units form pinnacles and knolls.

According to information garnered from Equity Oil Company's Mounds 3-A Carbon-dioxide well located in Section 18 of T15S, R12E, the Mancos Shale is approximately 420 feet thick below the surface at the loadout. Underlying the Mancos Shale is the Dakota Sandstone, Ceder Mountain Formation., Buckhorn Formation and pre-Cretaceous formations.

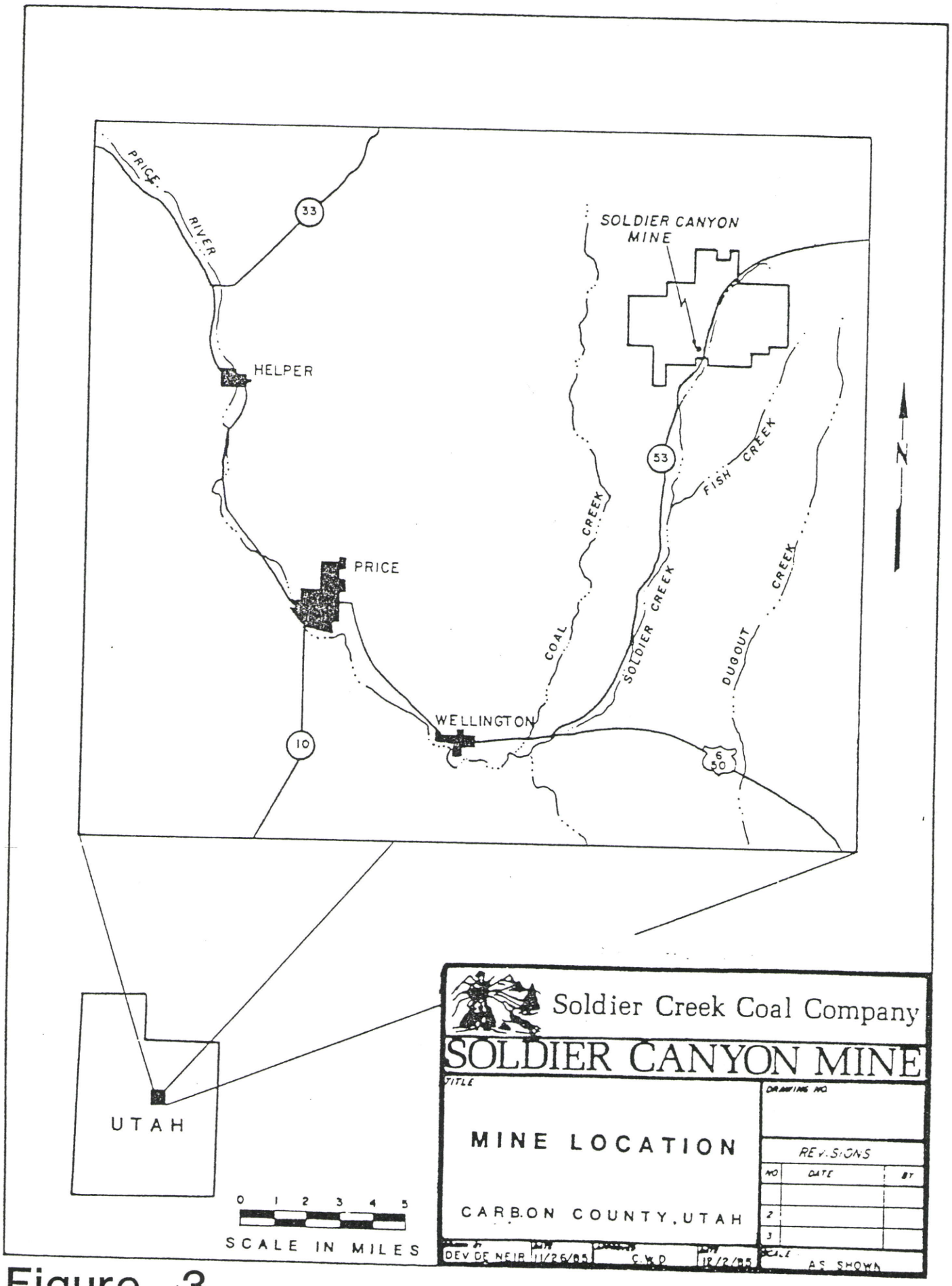

PRICE RIVER
33
HELPER
SOLDIER CANYON MINE
53
FISH CREEK
COAL CREEK
SOLDIER CREEK
DUGOUT CREEK
PRICE
WELLINGTON
10
6
50
N
UTAH
0 1 2 3 4 5
SCALE IN MILES
Soldier Creek Coal Company
SOLDIER CANYON MINE
TITLE
MINE LOCATION
CARBON COUNTY, UTAH
DRAWING NO.
REVISIONS
NO DATE BY
DEV DE NEIB 11/26/85 C.W.D 12/2/85
SCALE AS SHOWN

Figure 3

The formations that lie stratigraphically above the Mancos Shale can be seen outcropping in the escarpment of the Bookcliffs about nine miles to the north and east. The Bookcliffs are formed from the more resistant Mesa Verde Group of late Cretaceous age and the Northhorn Formation and Flagstaff Limestone of Tertiary age (see Figure 4).

The mineable coal seams in the vicinity of the Banning Loadout facility exist in the Blackhawk Formation. The closest mines in the vicinity of the loadout are the Sunnyside Mine (inactive), Horse Canyon Mine (inactive), the Centennial Mines and Soldier Canyon Mine.

No major fault systems are evident in the vicinity of the loadout.

B. Topography and Precipitation

The area surrounding the Banning Loadout is arid. Principal uses are range land and wildlife habitat. Topography over the site is relatively flat with small rolling hills.

Average annual precipitation is between six and eight inches. The mean annual air temperature is 9° to 10° C. Annual snowfall contributes to this value with the area generally snow-covered from early November to mid-April.

The facility is located within a Greasewood-Shadscale desert shrub association of the Upper Sonoran (cold desert) life zone. Common vegetation species include; Shadscale, Broom snakeweed, Greasewood, Fringed sage, Blue grama, Indian ricegrass, Bottlebrush squirreltail, Sand dropseed, Prickly pear cactus and several perennial and annual weeds.

The soil at the Banning Loadout facility is primarily alluvium, derived from sandstone and shale. A torric moisture with a mesic temperature regime prevails. The average annual soil temperature is higher than 8° C but less than 15° C.

Under native vegetation the erosion associated with the soil is moderate. The hazard of soil wind erosion is moderate. This soil is generally well drained and ranges in texture from a loam to silt loam. Permeability is moderate. The available water capacity ranges from 7.5 to 10.5 inches. The soil is strongly alkaline and is in the Alkali Flat range site.

System	Series	Stratigraphic unit	Thickness (feet)	Description
TERTIARY	Eocene	Green River Formation	–	Greenish gray and white claystone and shale, also contains fine-grained and thin-bedded sandstone. Shales often dark brown containing carbonaceous matter. Full thickness not exposed.
		Colton Formation (Wasatch Formation)	300-2,000	Colton consists of brown to dark red lenticular sandstone, shale and siltstone, thins westwardly and considered a tongue of the Wasatch.
		Wasatch Formation	3,000	Wasatch predominantly sandstone with interbedded red and green shales with basal conglomerate. Found in east part of field and equivalent to Colton and Flagstaff in west.
		Flagstaff Limestone	0- 500	Flagstaff mainly light gray and cream colored limestones, variegated shale, and fine-grained, reddish brown, calcareous sandstone.
	Paleocene	North Horn Formation	350-2,500	Gray to gray green calcareous and silty shale, tan to yellow-gray fine-grained sandstone and minor conglomerate. Unit thickens to west.
		MINOR COAL		
CRETACEOUS	Danian	Tuscher Formation	0- 200	Light gray to cream-white friable massive sandstone and subordinate buff to gray shale that exhibits light greenish cast. Contains minor conglomerate and probably represents lower part of North Horn, only present in east part of field.
	Maestrichthian	Price River Formation (Mesaverde Group)	500-1,500	Yellow-gray to white, medium-grained sandstone and shaley sandstone with gray to olive green shale. Contains carbonaceous shale with minor coal and thickens along east edge of field.
		MINOR COAL		
	Campanian	Castlegate Sandstone (Mesaverde Group)	100- 500	White to gray, fine- to medium-grained, argillaceous massive resistant sandstone thinning eastwardly with subordinate shale. Carbonaceous east of Horse Canyon but coal is thin and lignitic.
		MINOR COAL		
		Blackhawk Formation (Mesaverde Group)	600-1,100	Cyclical littoral and lagoonal deposits with six major cycles. Littoral deposits mainly thick-bedded to massive cliff-forming yellow-gray fine- to medium-grained sandstone, individual beds separated by gray shale. Lagoonal facies consist of thin- to thick-bedded yellow-gray sandstones, shaley sandstones, shale and coal. Coal beds form basis of Book Cliffs coal field. Unit thins eastward grading into the Mancos Shale.
		MAJOR COAL SEAMS		
		Star Point Sandstone (Mesaverde Group)	0- 580	Yellow-gray massive medium- to fine-grained littoral sandstone tongues projecting easterly separated by gray marine shale tongues projecting westerly.
		Masuk Tongue (Mancos Shale)	4,300-5,050	Gray marine shale, locally heavily charged with carbonaceous material, slightly calcareous and gypsiferous, nonresistant forming flat desert surfaces and rounded hills and badlands. Separated mainly to the west into tongues by westward projecting littoral sandstone which eventually grade into shale. Sandstones are fine- to medium-grained, yellow-gray to tan and medium-bedded to massive and cliff forming.
		Emery Sandstone (Mancos Shale)		
	Santonian	Garley Canyon Sandstone (Mancos Shale)		
	Coniacian	Blue Gate Shale (Mancos Shale)		
	Turonian	Ferron Sandstone (Mancos Shale)		
		MINOR COAL		
		Tununk Shale (Mancos Shale)		
	Cenomanian	Dakota Sandstone	2- 126	Heterogeneous sandstone, conglomerate and shale, thin resistant cuesta former.

Figure 4 Generalized section of rock formations, Book Cliffs coal field.

The only soil identified in the Banning Loadout area is the Ravola series. The Ravola series is taxonomically classified as a fine-silty, mesic Typic Torrifluvent. Topsoil pH ranges from 8.3 to 9.1 while the substratum pH ranges from 8.4 to 9.7. Carbonate equivalent is 5 to 25 percent. Electrical conductivity ranges from 0.9 to 25 mmhos/cm, with the mean topsoil electrical conductivity of 5.06 mmho/cm and subsoil mean electrical conductivity of 10.76 mmho/cm. Of the three soil sample sites, one location had a low sodium adsorption ratio (SAR) of 1.4 to 3.7, while other sample sites are strongly alkaline with the SAR ranging from 37 to 54, median of 51.3. See Table 6.2-1, page 6-6 for further details.

Physical deterioration of the soil structure caused by high amounts of sodium should be negated by high salts in the soil medium. Percent clay levels range from 18 to 27 percent. No slickspots (sodium dispersed soils) were evident in the Banning Loadout Facility area.

The native soil has a moderate coarse subangular blocky structure down to 23 inches of the profile. Soil structure is massive from 23 to 60 inches. The disturbed soil is contiguous with the undisturbed Ravola series.

V. Hydrologic Resources

A. Ground Water

The ground water regime within the CIA is dependent upon climatic and geologic parameters that establish systems of recharge, movement and discharge.

The Banning Loadout is constructed on the eroded surface of the Mancos Shale. The shaley units of the Mancos Shale have a very low permeability and serve as confining beds for the underlying formations rather than aquifers. Drillhole data from petroleum exploration in the region suggest that the Mancos Shale, where saturated, contains water that is moderately to very saline (Waddell, et al., 1981). Development of the uppermost saturated zone beneath the site has not occurred. This will further limit impacts to the ground water.

Complete information regarding regional and local ground water gradients and flow is incomplete. Information garnered from observation within and near the mine suggests ground water exists to some extent in the relatively low permeable Mancos shale. Although the application does not present site specific data for the area, research by Waddell (1981) and Hood and Patterson (1984) is cited in the Mining and Reclamation Plan (MRP). Transmissivities in the Mancos shale tend to be very low and water quality is considered to be poor (section 5.1.2 of the MRP).

Springs do not occur within the CIA. One ground water source has been developed by the operator. A sump about 16 feet deep was excavated to pick up moisture from the vados zone and water from the coal. The sump is located in the lower part of the basin and is sealed with cement at the bottom. Recharge to the sump varies, but averages about 1000 gallons per day. The water is mostly pumped for dust suppression at the site. Recently, the water has been discharged under a National Polutant Elimination Discharge System (NPDES) permit (UT-0023817).

B. Surface Water

The Banning Loadout permit area is located in the Grassy Trail Creek watershed in an unnamed tributary drainage basin. Grassy Trail Creek is classified as an intermittent stream with most of the annual flow occurring during the spring runoff. There are no perennial streams in the vicinity of the loadout and the annual water yield of the area is very low, therefore the operation will have little effect on the existing surface water regime. Water quality of surface and ground water in the permit area is poor with high concentrations of dissolved solids.

The operation is located in an ephemeral drainage basin within the Grassy Trail Creek watershed. The site is developed on the relatively flat alluvium underlain by the Mancos shale. The slope of the site and surrounding permit area is approximately 1 - 4 percent. A small ephemeral tributary to Grassy Trail Creek is located adjacent to the northwest corner of the permit area (reference U.S.G.S. Sunnyside Junction, Utah Quadrangle and Figure 2).

The surface waters flow only during spring snowmelt and during thunderstorms later in the summer. There are no continuous discharge records for this drainage because of the characteristic low flows. Research has shown the water quality of Grassy Trail Creek to be poor with high concentrations of dissolved solids.

The applicant proposes to divert disturbed area runoff to the sedimentation pond by the using berms and diversion ditches.

The applicant has applied for an NPDES permit and commits to monitor all discharges from the pond. The applicant proposes to monitor discharges occurring through the straw bales and silt fences along the haulage road as occurrence of runoff allows (section 5.3.1, MRP).

There is no riparian habitat associated with the permit area or other critical valued wildlife habitat.

VI. Potential Hydrologic Impacts

A. Ground Water

The only identifiable ground water resource within the CIA is highly saline. Due to the very low transmissivities of the shale and high concentrations of salts in the Mancos Shale, it is concluded that there will be no adverse effects to ground water or adjacent surface waters.

B. Surface Water

The primary potential for acid- or toxic- forming materials (ATFM) would be generated from the coal. A sampling and testing program for coal stored at the site is proposed by the operators.

The existing water resources in the vicinity of the site are considered to be of marginal importance due to existing low water quality. Waters in the area are heavily influenced by the Mancos shale formation which dominates the entire region. Water quality in the region tends to be characterized by high concentrations of total dissolved solids. Samples from Grassy Trail Creek upstream from U.S. Highway 6 had total dissolved solids concentrations ranging from 872 to 2510 milligrams per liter (section 5.1.1, MRP) Natural surface drainage channels in the permit area do not exist.

The area influenced by surface disturbance is of limited areal extent. Surface sediment controls currently are in place and will continue to be in place during reclamation. A sediment pond will treat drainage from the majority of the area. The pond is conservatively designed as it will sufficiently contain the 100 yr - 24 hr precipitation event.

The water quality impacts associated with reclamation will be minimal or nonexistent due to the fact that all drainage from the disturbed area will be routed through these sediment controls and treated prior to any discharge. Site-specific erosion control practices, such as riprap, silt fences, surface pitting, and energy dissipators will be used to control erosion of small areas within the disturbed area.

The operational design proposed for reclamation of the Banning Loadout is herein determined to be consistent with preventing damage to the hydrologic balance outside the mine plan area.

C. Conclusion

In conducting operations as prescribed to in their Mining and Reclamation Plan, there are no forseen impacts to the hydrologic regime for the Banning Loadout. Abnormal deterioration of ground and surface waters due to the storage and handling of coal should not occur off the permit area.

References Cited

Doelling, H.H., 1972, Central Utah Coal Fields, Utah Geological and Mineralogical Survey Monograph Series No. 3.

Soldier Creek Coal Company, Banning Siding Loadout Mining and Reclamation Plan, Submitted January 4, 1988, revised August 5, 1988.

Stokes, William Lee, 1986, Geology of Utah, Utah Geological and Mineral Survey Publication.

WPOB64

STIPULATIONS

Soldier Creek Coal Company
Banning Loadout
ACT/007/034
Carbon County, Utah

Stipulation UMC 817.22-(1) - JSL

1. The applicant must implement the described test plot program by the end of fall 1988. The applicant must notify the Division one (1) week in advance of the test plot implementation.

Stipulation UMC 817.43-(1) - MMD

1. Within 30 days of permit issuance, the applicant must submit an adequate culvert design to the Division for the culverts at the north and south gates of the access road. This design must demonstrate that the existing culverts will safely pass the 10 year - 24 hour precipitation runoff. The exact location and size of these culverts, including an identification label, must be depicted on an appropriate map and included in the proposal.

Stipulation UMC 817.46-(1) - MMD

1. The applicant must install 34 inch anti-seep collars on the primary spillway of the sedimentation pond. The submittal of certified as-built drawings must correct the collar size discrepancy found in Appendix II of the MRP (page 30 and Exhibit 5.2-3).

Stipulation UMC 817.52-(1) - RPS

1. Within 30 days of permit approval, the applicant shall submit to the Division a revision for section 5.3.2. The revision must include a commitment to submit quarterly coal quality samples for a period of one year.

Stipulation UMC 817.53-(1) - RPS

1. Within 30 days of permit approval, the applicant must submit specifications for the plugging of the water well. These specifications must conform to the requirements outlined in the document entitled "Administrative Rules for Water Well Drillers, State of Utah, 1985".

Stipulation UMC 817.103-(1) - JRH

1. Within 30 days of permit approval, the operator shall commit to notify the Division 30 days prior to transporting coal, coal waste, or sediment pond waste to the Soldier Canyon Mine. The notification shall include the estimated quantity of material to be transported and the final location and disposition of the material for permanent disposal at the mine site.

Stipulations UMC 817.116-(1) - LK

1. Within 30 days of permit approval, the operator will submit a quantitative monitoring plan for the test plot for review and approval. This plan must identify appropriate parameters to be sampled and the sampling schedule.

Stipulation UMC 817.133-(1) - LK

1. Within 90 days of permit approval, the applicant will provide DOGM with plans for the final disposition of fences associated with the facilities and haul road. Evidence showing coordination in developing the plan with the BLM and Utah Division of Wildlife Resources as well as acceptance by the BLM shall be included in the plan.

TECHNICAL ANALYSIS

Soldier Creek Coal Company
Banning Loadout
ACT/007/034
Carbon County, Utah

UMC 800. Bonding and Insurance - JRH

Existing Environment and Applicant's Proposal

The operator has included a reclamation cost estimate with the operation and reclamation plan. This information is found in section 3.8 of the plan and in table 3.8-1 and 3.8-2.

Compliance

Bonding details and calculations are considered to be technically adequate and sufficient to determine the bond amount.

Calculations by the Division, based on information submitted by the operator, are included with the technical analysis.

Bond in the amount of $211,000.00 (in 1993$) has been determined by the Division and provided by the operator in accordance with the requirements of this permit.

Stipulations

None.

UMC 817.11 Signs and Markers - SCL

Existing Environment and Applicant's Proposal

The applicant has committed to mark the perimeter of the disturbed area with perimeter markers, red reflectors attached to fence posts and/or steel pins set into the ground. Identification signs will be placed at access points into the permit area (Mining and Reclamation Plan (MRP) p. 2-1). There are no topsoil stockpiles or stream buffer zones within the permit area.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.21-.25 Topsoil: Management - JSL

Existing Environment and Applicant's Proposal

The soil at the Banning Loadout facility is primarily alluvium, derived from sandstone and shale. Slopes are one to three percent. The vegetation is mainly greasewood, shadscale, rabbitbrush, galleta, blue gramma, and indian ricegrass.

A torric moisture with a mesic temperature regime prevail. Average annual precipitation is between six and eight inches. The mean annual air temperature is 9° to 10° C with the average annual soil temperature higher than 8° C but less than 15° C. The topography of the area is concave-convex or single in shape. The aspect is generally south. The capability subclass is VIIIe nonirrigated.

Under native vegetation the erosion associated with the soil is moderate. The hazard of soil wind erosion is moderate. This soil is generally well drained and ranges in texture from a loam to silt loam. Permeability is moderate. The available water capacity ranges from 7.5 to 10.5 inches. Effective rooting depth is 60 inches or more. The soil is strongly alkaline and is in the Alkali Flat range site.

The only soil identified in the Banning Loadout area is the Ravola series. Ravola series is taxonomically classified as a fine-silty, mesic Typic Torrifluvent. Topsoil pH ranges from 8.3 to 9.1 while the substratum pH ranges from 8.4 to 9.7. Carbonate equivalent is 5 to 25 percent. Electrical conductivity ranges from 0.9 to 25 mmhos/cm, with the mean topsoil electrical conductivity of 5.06 mmho/cm and subsoil mean electrical conductivity of 10.76 mmho/cm. Of the three soil sample sites, one location had a low sodium adsorption ratio (SAR) of 1.4 to 3.7 while other sample sites are strongly alkaline with the SAR ranging from 37 to 54, and a median of 51.3. See Table 6.2-1, page 6-6 for further details.

SAR values are considered high and will be an important factor in revegetation efforts. Physical deterioration of the soil structure caused by high amounts of sodium should be negated by high salts in the soil medium. Percent clay levels range from 18 to 27 percent. No slickspots (sodium dispersed soils) were evident in the Banning Loadout facility area.

The native soil has a moderate coarse subangular blocky structure down to 23 inches of the profile. Soil structure is massive from 23 to 60 inches. Roots were noted down to 60 inches along coarse pores. The disturbed soil is contiguous with the undisturbed Ravola series. The Ravola series is ranked fair for revegetation under controlled conditions. A test plot program is being initiated at the Loadout facility to determine the correct agronomic procedure and ensure success of the proposed reclamation plan.

Removal

Banning Loadout was disturbed prior to the promulgation of the regulations governing coal loadout facilities. The site is small in extent and covers only one soil series. Existing disturbance has destroyed the pre-existing vegetation and degraded topsoil through compaction and contamination of coal fines. In-situ soil material will be used as a substitute topsoil material. In-situ soil material physio-chemical analysis (Table 6.2-1 & 6.2-2) indicates the soil has a high SAR and is highly saline. The data indicates that the in-situ soil material is comparative to the native Ravola series. As described in section 6.3, a test plot will be utilized to insure reclamability with the in-situ soil material. The test plot will be executed in the same manner as proposed in the reclamation plan, section 3.5.

Compliance

The applicant's proposal does not adequately address the requirements of this section. The test plot location and time of implementation has not been defined.

Stipulation UMC 817.22-(1) - JSL

1. The applicant must implement the described test plot program by the end of fall 1988. The applicant must notify the Division one (1) week in advance of the test plot implementation.

Storage

The site was historically disturbed. No topsoil materials were salvaged at the time of disturbance. In-situ soil material will be utilized as a substitute topsoil, contingent upon the positive outcome of the proposed test plots.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

Redistribution

The applicant provides a plan which details the redistribution of the soil in section 3.5 and 6.3 of the MRP. Existing soils will be backfilled and graded to approximately the original predisturbance conditions. Soil compaction will be reduced by ripping the soil to a 18 inch depth. The soil surface will be covered with 2000 pounds per acre of alfalfa or native hay which will then be crimped-disced into the soil.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

Nutrients and Amendments

The applicant provides a nutrient management plan in section 3.5 and 3.6 of the MRP. Physio-chemical data is presented in Table 6.2-1 and 6.2-2. The applicant commits to sample the soil at the time of redistribution. Present soil analysis suggest that 40 pounds per acre of sulfur-coated urea (45-0-0) will be required as a fertilizer amendment.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

UMC 817.41 Hydrologic Balance: General Requirements - MMD

Existing Environment and Applicant's Proposal

The Banning Loadout permit area is located in the Grassy Trail Creek watershed in an unnamed tributary drainage basin. Grassy Trail Creek is classified as an intermittent stream with most of the annual flow occurring during the spring runoff. There are no perrenial streams in the vicinity of the loadout and the annual water yield of the area is very low, therefore the operation will have little effect on the existing surface water regime. Water quality of surface and groundwater in the permit area is poor with high concentrations of dissolved solids. The loadout facility is underlain by the Mancos Shale formation which has a low permeability and acts as an aquatard. The permit area is considered to be a poor recharge source for groundwater, and the operation will have a negligable effect on the existing groundwater regime.

The applicant proposes to control surface runoff from the disturbed area by using a combination of berms, culverts, diversion ditches, a sedimentation pond and a small containment dike. With the exception of a small area in the southeast corner of the loadout facility and an area classified as a closed basin (Exhibit 5.2-1), all loadout disturbed area drainage will be routed to the sedimentation pond for treatment prior to discharging into the natural drainage system. The applicant proposes to install berms around the perimeter of the

disturbed area. These berms have been adequately designed to safely contain and pass the predicted runoff from a 10 year - 24 hour precipitation event. Division analysis of the system has demonstrated that the expected flow velocities produced by such an event are non-erosive, therefore no channel lining is required for these structures.

The proposed sedimentation pond is adequately sized to contain the 25 year - 24 hour precipitation event runoff and a ten year sediment volume (Appendix II, Vol. 2, MRP). The applicant proposes to contain disturbed area runoff from a small area (0.12 acres) in the southeast corner of the facility using a small containment dike outside the bermed area.

Compliance

The operator has proposed designs utilizing the best available technology to minimize impacts to the existing water quality in the permit and adjacent areas. The following sections of this technical analysis contain detailed discussions of the applicant's proposal. The applicant's proposal will meet the general requirements for this section when the stipulations in sections UMC 817.42 - 817.53 are met.

Stipulations

None.

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations - MMD

Existing Environment and Applicant's Proposal

The permit area is located in an intermittent drainage basin, with surface water flowing only during spring snowmelt runoff and during thunderstorms later in the summer. There are no continuous discharge records for this drainage because of the characteristic low flows. Research has shown the water quality of Grassy Trail Creek to be poor with high concentrations of dissolved solids. This is primarily due to the mineralogy of the geologic formation underlying the area which contains large quantities of soluble salts.

With the exception of two areas, all surface runoff from the loadout disturbed area will report to the sedimentation pond. An area identified as a closed basin on Exhibit 5.2-1 will be contained within the entrance haul road and the loading dock. A small area in the southeast corner, which does not report to the pond, will be contained by a dike. Drainage from the access road between the loadout facility and U.S. Highway 6 shall be treated by a combination of straw bale dikes and silt fence check dams. The applicant has committed to installing these structures in the roadside ditches immediately upstream of any confluences with natural ephemeral channels. The applicant has committed to maintaining the access road culverts for the life of the operation.

Compliance

The applicant is in compliance with this regulation.

Stipulations

None.

UMC 817.43 Hydrologic Balance: Diversions And Conveyance of Overland Flow, Shallow Ground Water Flow, And Ephemeral Streams - MMD

Existing Environment and Applicant's Proposal

The applicant proposes to divert disturbed area runoff to the sedimentation pond by the previously described berms and diversion ditches. In addition, two culverts will be utilized to convey runoff across the loadout access road at the north and south gates. The Division has determined the proposed berm is designed to safely pass the expected runoff from the 10 year - 24 hour precipitation event at non-erosive velocities and with the required freeboard. The applicant has demonstrated that the diversion ditch design is adequate to pass the 25 year - 24 hour precipitation event runoff. However, the proposal contains no designs for the culverts at the two access road gates.

Compliance

The applicant is not in compliance with this section. The applicant must include adequate culvert design in the proposal demonstrating that the existing culverts will safely pass the design storm runoff.

Stipulation UMC 817.43-(1) - MMD

1. Within 30 days of permit issuance, the applicant must submit an adequate culvert design to the Division for the culverts at the north and south gates of the access road. This design must demonstrate that the existing culverts will safely pass the 10 year - 24 hour precipitation runoff. The exact location and size of these culverts, including an identification label, must be depicted on an appropriate map and included in the proposal.

UMC 817.44 Hydrologic Balance: Stream Channel Diversions - RPS

Existing Environment and Applicant's Proposal

The proposed operation is located within the Grassy Trail Creek watershed. The site is developed on the relatively low slope alluvium underlain by the Mancos shale. The slope of the site and surrounding permit area is approximately 1 - 4

percent. A small ephemeral tributary to Grassy Trail Creek is located adjacent to the northwest corner of the permit area (reference U.S.G.S. Sunnyside Junction, Utah Quadrangle and Exhibit 2.1-1). The proposed site will not disturb this channel. A small gully that has developed subordinate to that unnamed tributary will be repaired in conjunction with the installation of the proposed sedimentation pond (Exhibit 5.2-1).

Compliance

This regulation is not applicable to this proposal. The applicant is in compliance.

Stipulations

None.

UMC 817.45 Hydrologic Balance: Sediment Control Structures - RPS

Existing Environment and Applicant's Proposal

The operation will result in approximately 26.1 acres of disturbance. Surface drainage from this disturbance will be treated using a sedimentation pond, a containment berm, two diversions, and a dike. The haulage road drainage will be treated using silt fences and/or straw bales.

The site and surrounding area has a low slope with very little defined drainage. The applicant has proposed to install a berm around the entire perimeter of the loadout disturbed area. The berm will serve to segregate the disturbed area and undisturbed area drainage. A sedimentation pond has been proposed to treat 15.5 acres of drainage (Exhibit 5.2-1). A portion of the disturbance will be contained within the haul road loop and will not report to the sedimentation pond. The existing grade at the site results in a low area in the southeast corner of the permit area that will be unable to report to the sediment pond. The drainage from this area will be contained within a dike.

Compliance

Considering the topography at the site and the dynamic nature of the operation (i.e. the site is continually regraded as coal is stored and removed), the Division believes the applicant's proposal is a reasonable solution to provide maximum sediment control while maintaining site flexibility. The proposal provides for complete containment and/or treatment of all runoff from a 10 year - 24 hour precipitation event without establishing a potentially unworkable static drainage system. The applicant is in compliance with this regulation.

Stipulations

None.

UMC 817.46 Hydrologic Balance: Sedimentation Ponds - MMD

Existing Environment and Applicant's Proposal

The applicant proposes to construct a new sedimentation pond for the loadout facility at the existing pond location on the southwest corner of the site. The new pond will be primarily incised, with a maximum embankment height of six feet above the existing ground surface (page 5-12). Construction of the new pond will basically expand the existing pond and will retain the sediment control function of the pond during the construction process.

The applicant has demonstrated that the pond is adequately designed to contain 10 years of sediment volume and will completely contain the predicted runoff from the 10 year - 24 hour precipitation event (Appendix II, page 3). Two sediment level markers will be placed in the pond to determine the 60% sediment cleanout level. The proposed design implements a drop inlet primary spillway structure, a two inch diameter dewatering device, and a broad crested emergency spillway structure. The emergency spillway crest will be at an elevation of 5495.2 feet, one foot above the primary spillway crest elevation of 5494.2 feet. The applicant has adequately demonstrated that the primary spillway will convey the runoff from the 25 year - 24 hour precipitation event at a maximum water level below the emergency spillway crest (Appendix II, page 12).

The emergency spillway has been included in the sediment pond design as a conservative safety measure. The applicant has demonstrated that the emergency spillway capacity is adequate to safely pass the complete runoff from the 25 year - 24 hour precipitation event. The applicant's emergency spillway calculations use a Manning's n value of 0.03 (Appendix II, page 13). The Division feels a value of 0.020-0.025 would be more applicable to site conditions. However, the proposed pond design is determined to be justified because:

1. The pond is over-designed for capacity.

2. The pond embankment height at the emergency spillway is very low (<3 feet), therefore failure of the spillway would not result in failure of the actual pond structure.

3. The slope of the emergency spillway exit channel is to be the same as the existing ground slope (approximately 2.5%).

4. The probability of primary spillway failure due to clogging is considered low due to the sparsity of debris in the area. Therefore, the emergency spillway will only function in the event of an extreme storm event (greater than the 25 yr. - 24 hr. event)

The applicant has demonstrated that the proposed inlet channel design will safely pass the 25 year - 24 hour precipitation runoff (Appendix II, page 23). The applicant proposes to riprap the inlet channel sections down the northeast and southeast corners of the pond embankment. The proposed riprap design (d_{50}=6 in.) and filter blanket material have been shown to be stable during the 25 year event.

The applicant commits to constructing the pond embankment to a minimum width of (H+35/5) or 8.2 feet as shown on Exhibit 5.2-2. The inside embankment slope will be constructed at 3:1 and the outer slope at 2:1 (Exhibit 5.2-2). Page 5-12 of the proposal states that the dam will be constructed to a maximum height of 5496.5 feet to allow for 0.3 feet settlement. The proposed primary spillway design includes installation of two anti-seep collars on the barrel of the spillway. Calculations on page 30, Appendix II determine a collar width of 3.4 feet, yet Exhibit 5.2-3, detail "E" shows the collar size to be two feet. This discrepancy must be corrected.

Compliance

The applicant has not committed to preparing the embankment foundation to the specifications of UMC 817.46 (n). The applicant has not committed to constructing the dam using material free of vegetative matter as required by UMC 817.46 (o). A stipulation on these items is not warranted, but the operator should realize these are performance standards that must be met during construction.

Stipulation UMC 817.46-(1) - MMD

1. The applicant must install 34 inch anti-seep collars on the primary spillway of the sedimentation pond. The submittal of certified as-built drawings must correct the collar size discrepancy found in Appendix II of the MRP (page 30 and Exhibit 5.2-3).

UMC 817.47 Hydrologic Balance: Discharge Structures - RPS

Existing Environment and Applicant's Proposal

The proposed drainage system consists of two discharge points at the pond inlets and two discharge points in the natural drainage channel at the outlet of the primary spillway and the decant pipe. No other discharge points will exist on site.

On page 5-9 of the MRP the applicant commits to installing riprap aprons at the primary spillway and decant pipe outlets. Calculations in Appendix II (page 1) determine the riprap d_{50} to be 1.1 inches. These calculations assume the pipe is flowing full at the outlet. As a conservative measure the applicant calculated the tailwater depth at a point three feet downstream from the outlet. Therefore, the methodology outlined by the U.S.E.P.A (1976) is applicable for this system. The proposed design requires an apron length of 9.5 feet, and an apron width of 5.3 feet. The applicant proposes a six inch filter blanket with a maximum d_{50} of 0.28 inches and a minimum d_{50} of 0.008 inches.

Compliance

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.48 Hydrologic Balance: Acid-Forming and Toxic-Forming Materials - JSL

Existing Environment and Applicant's Proposal

Coal processing waste produced by screening or processing will be blended into raw coal, transported to the approved waste disposal site at the Soldier Canyon Mine or returned to the underground workings. The primary potential for acid - or toxic - forming materials (ATFM) would be generated from the coal. A sampling and testing plan to determine any ATFM is discussed in section 2.5 and 5.3.2 of the MRP.

Compliance

The applicant's proposal adequately addresses the requirements of this section. However, due to insufficient baseline information at the site, the Division feels the variability in coal quality should be quantified during the first year of the permit term. Therefore, a set of coal quality leachate data should be submitted during the first year following permit approval. Stipultion UMC 817.52-(1) - RPS is necessary for approval.

Stipulations

Refer to Stipulation UMC 817.52-(1) - RPS.

UMC 817.49 Hydrologic Balance: Permanent and Temporary Impoundments - RPS

Existing Environment and Applicant's Proposal

A single sedimentation pond located in the southwest corner of the permit area is proposed for the site. The proposal commits to reclamation of the pond when drainage water quality and revegetation requirements are met (section 3.4, MRP). The pond is partially excavated with interior sideslopes of 3:1. The proposal includes erosion protection at all inlets to the pond (Exhibit 5.2-2, MRP). The disturbance associated with the pond construction will be revegetated upon completion of pond construction (section 5.2.2, MRP). The proposal commits to submitting an as-built report of the construction certified by a registered professional engineer following completion of pond construction (section 5.2.2, MRP).

Compliance

The applicant's proposal meets the requirements of this regulation.

Stipulations

None.

UMC 817.50 Hydrologic Balance: Underground Mine Entry And Access Discharges - RPS

UMC 817.55 Hydrologic Balance: Discharge Of Water Into An Underground Mine - RPS

Existing Environment and Applicant's Proposal

The entire proposed operation consists of the processing and loading of coal. No mining is proposed for this operation.

Compliance

These regulations do not apply to this operation. The applicant is in compliance.

Stipulations

None.

UMC 817.52 Hydrologic Balance: Surface and Ground Water Monitoring - RPS

Existing Environment and Applicant's Proposal

Surface Water

The existing water resources in the vicinity of the site are considered to be of marginal importance due to existing low water quality. Waters in the area are heavily influenced by the Mancos shale formation which dominates the entire region. Water quality in the region tends to be characterized by high

concentrations of total dissolved solids. Samples from Grassy Trail Creek upstream from U.S. Highway 6 had total dissolved solids concentrations ranging from 872 to 2510 milligrams per liter (section 5.1.1, MRP). Natural surface drainage channels in the permit area do not exist. Operations proposed for the site consist of activities on the surface only. Coal will be processed, stored, and loaded at the site. Surface waters from the loadout area will largely report to the sedimentation pond for treatment. The applicant has applied for an NPDES permit and commits to monitor all discharges from the pond. The applicant proposes to monitor discharges occurring through the straw bales and silt fences along the haulage road as occurrence of runoff allows (section 5.3.1, MRP).

Ground Water

The Banning Siding loadout is located on the eroded surface of the Mancos Shale. The geologic characteristics in the vicinity of the mine area are described in Chapter 5, sections 5.1.2 and 5.4.2. The shaley units of the Mancos Shale have a very low permeability and serve as confining beds for the underlying formations rather than aquifers. Although the application does not present site specific data for the area, research by Waddel, 1981 and Hood and Patterson, 1984 is cited in the MRP. Drillhole data from petroleum exploration in the region suggest that the Mancos Shale, where saturated, contains water that is moderately to very saline . Transmissivities in the Mancos shale tend to be low and water quality is considered to be poor (section 5.1.2, MRP). Development of the uppermost saturated zone beneath the site has not occurred.

The only potential for impacts to the groundwater resource would be leaching of constituents from the coal into the groundwater. The applicant has proposed to monitor the quality of the coal annually. In addition, the applicant has proposed to monitor the water quality in the existing well annually, each fall (section 5.3.2, MRP). The water samples will be analyzed according to the parameter list given in section 23 of section 1.16 of the MRP.

Results will be submitted to the Division each year with the required annual report. If the coal quality analysis indicates a potential for water quality degradation, the applicant will initiate a more intensive ground water monitoring program (section 5.3.2, MRP). This program will consist of drilling two wells, and monitoring those wells during high and low water table level conditions. The samples will be analyzed for the constituents contained in the complete baseline parameter list presented in section 24 of section 1.16.

Compliance

The information presented in the Mining and Reclamation Plan by Soldier Creek Coal Co. concludes the potential negative impacts this loadout will have on the ground water system. The Regulatory Authority concurs that transmissivities within the shale members are very low. The permeability of the shales should retard vertical movement of overland flow and leachates from reaching any saturated zones. The applicant has presented an acceptable alternative to monitoring the groundwater in the area via the monitoring of potential impact sources (i.e. coal quality). However, due to insufficient baseline information at the site, the Division feels the variability in coal quality should be quantified during the first year of the permit term. Therefore, a set of coal quality leachate data should be submitted during the first year following permit approval. Stipulation UMC 817.52-(1) - RPS is necessary for approval.

Stipulation UMC 817.52-(1) - RPS

1. Within 30 days of permit approval, the applicant shall submit to the Division a revision for section 5.3.2. The revision must include a commitment to submit quarterly coal quality samples for a period of one year.

UMC 817.53 Hydrologic Balance: Transfer Of Wells - RPS

Existing Environment and Applicant's Proposal

A single water well exists at the site (identified as the water sump on Exhibit 2.1-1). The proposal includes a commitment to plug the well during reclamation of the site (section 3.4, MRP). However, the proposal does not contain specific details of the well closure.

Compliance

The applicant is generally in compliance with this regulation. However, specific details of the well closure should be submitted. These should include a commitment to have the well closed by a licensed well driller and conform to the requirements of the State Engineer's "Administrative Rules for Water Well Drillers, 1985".

Stipulation UMC 817.53-(1) - RPS

1. Within 30 days of permit approval, the applicant must submit specifications for the plugging of the water well. These specifications must conform to the requirements outlined in the document entitled "Administrative Rules for Water Well Drillers, State of Utah, 1985".

UMC 817.71 Disposal of Excess Spoil and Underground Developement Waste: General Requirements - JSL

UMC 817.72 Disposal of Excess Spoil and Underground Developement Waste: Valley fills - JSL

UMC 817.73 Disposal of Excess Spoil and Underground Developement Waste: Head-of-Hollow Fills - JSL

UMC 817.74 Disposal of Excess Spoil and Underground Developement Waste: Durable Rock Fills - JSL

Existing Environment and Applicant's Proposal

The requirements of these sections have been addressed in sections 2.4 and 4.2 of the MRP. All waste material generated at the proposed facility will be blended into the raw coal, transported to the Soldier Canyon Mine approved waste rock disposal site, or returned to the underground workings.

Compliance

The applicant's proposal adequately addresses the requirements of these sections.

Stipulations

None.

UMC 817.81 Coal Processing Waste Banks: General Requirements - JSL

UMC 817.82 Coal Processing Waste Banks: Site Inspection - JSL

UMC 817.83 Coal Processing Waste Banks: Water Control Measures - JSL

UMC 817.85 Coal Processing Waste Banks: Construction Requirements - JSL

UMC 817.86 Coal Processing Waste Banks: Burning - JSL

UMC 817.87 Coal Processing Waste Banks: Burned Waste Utilization - JSL

UMC 817.88 Coal Processing Waste Banks: Return to Underground Workings - JSL

UMC 817.91 Coal Processing Waste: Dams and Embankments: General Requirements - JSL

UMC 817.92 Coal Processing Waste: Dams and Embankments: Site Preparation - JSL

UMC 817.93 Coal Processing Waste: Dams and Embankments: Design and Construction - JSL

Existing Environment and Applicant's Proposal

Plans for the disposal of the excess spoil and development waste can be found in sections 2.4 and 4.7 of the MRP. The applicant commits to blend all waste material into the raw coal, transport it to the approved Soldier Canyon Mine waste rock facility, or if the waste meets MSHA and other agency requirements, return it to the underground workings.

Compliance

The applicant's proposal adequately addresses the requirements of these sections.

Stipulations

None.

UMC 817.89 Disposal of Non-Coal Waste - JSL

Existing Environment and Applicant's Proposal

Plans for the disposal of non-coal waste is found in part 2.4 of the MRP. All garbage and scrap non-coal waste will be hauled off-site by a private contractor. Oil and grease, liquid waste, hazardous wastes and other such materials shall be diposed of in accordance with local, state, and federal regulations. All salvageable materials will be sold.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulation

None.

UMC 817.95 Air Resources Protection - SCL

Existing Environment and Applicant's Proposal

The applicant has submitted an Air Pollution Control Plan (section 2.7.2, p.2-13). Fugitive dust emissions are controlled by enclosing the truck dump and crusher, water sprays on the crusher and conveyor belts, covered conveyor belts, compaction of stored coal, and minimizing the distance from the coal silo to rail cars. Emissions from roads are controlled by slow speeds and surfacing of part of the haul road.

Compliance

The applicant has received an Approval Order from the Bureau of Air Quality dated July 16, 1980 (section 1.16, item 8). This order stipulates measures to control emissions, which Soldier Creek Coal Company has complied with. An emission inventory for the operation is submitted yearly to the Bureau of Air Quality. Should the capacity of the loadout be increased a new Air Quality Approval Order will be required.

The applicant's plan complies with the requirements of this section.

Stipulations

None.

817.97 Protection of Fish, Wildlife, and Related Environmental Values - LK

Existing Environment and Applicant's Proposal

The applicant has provided wildlife information and plans in chapter 8; chapter 2, pages 2-11 to 2-14 and Appendix V. Information is adequate to assess the impacts and proposed mitigation for wildlife resources.

The entire permit area is within the Upper Sonoran (cold desert) life zone and provides potential habitat for ca. 142 species of wildlife, including 4 amphibian species, 14 reptile species, 80 bird species and 44 mammal species. Of these, the Pronghorn Antelope (Icelander Antelope Herd Unit II) is of highest interest.

There is no riparian habitat associated with the permit area or other critical valued wildlife habitat.

Most impacts to wildlife occurred as habitat loss due to construction of the site in 1976. This will be mitigated upon reclamation of the site.

Compliance

The applicant has proposed a wildlife mitigation plan that will adequately mitigate continued impacts to wildlife. Specifics of the mitigation can be found in chapter 2, page 2-11 and 2-14 and chapter 8, page 8-3. This plan includes restoration of wildlife habitat upon cessation of operations (see reclamation plan), employee education, reporting of threatened or endangered plant or animal species, timing major disturbances to cause the least amount of impact, regulating the use of pesticides or other chemicals, preventing fires and their spreading outside the permit area, and operating and maintaining transportation systems and support facilities in a manner that minimizes impacts to wildlife.

All power lines currently associated with the operation are buried. If any above-ground lines are run to the site in the future, they will comply with appropriate guidelines (page 2-11).

The revegetation plan has been designed to provide improved forage for antelope.

The proposed wildlife plan is in compliance with the requirements of this section.

Stipulations

None.

UMC 817.100 Contemporaneous Reclamation - LK

Existing Environment and Applicant's Proposal

The proposed operation has disturbed 26.1 acres that are currently being used for operations (chapter 20, page 2-1 and 2-11). All reclamation is scheduled after final closure of the facilities.

Compliance

Table 3.8-1 shows the Final Reclamation timetable that indicates reclamation will be conducted as contemporaneously as practicable with the closure of the facilities. Page 3-7 and 5-13 provides plans for stabilizing the disturbances associated with the construction of sediment control structures. A small test plot will be established on site to demonstrate the practicality of the proposed revegetation plan in meeting the postmining land-use requirements (page 3-7).

The proposed plan is in compliance with the requirements of this section.

Stipulations

None.

UMC 817.101 Backfilling and Grading: General Requirements - JSL/JRH

Existing Environment and Applicant's Proposal

Backfilling and grading plans can be found in sections 3.3 and 4.2 of the MRP. Final topography map and cross-sections are presented on exhibit 3.3-1 and 4.2-1. All affected areas within the permit area except for the BLM access road will be returned to pre-mining conditions. The site will be reconstructed on the contour to achieve stability, prevent

slides and other erosional damage. The site is relatively flat with slopes of moderate grade. Stability will be achieved without extensive backfilling. The proposed landform configuration will conform to the existing drainage pattern and will approximate the original contour.

Compliance

The operator has provided assumptions in determining the amount of backfilling and grading that is to be required on the site for reclamation. Cross sections showing the existing operational sections and the proposed post reclamation configuration are provided in the plan. This section is considered to be technically adequate.

Stipulations

None.

UMC 817.103 Backfilling and Grading: Covering Coal and Acid- and Toxic-Forming Materials - JRH/JSL

Existing Environment and Applicant's Proposal

Information regarding this section of the regulations is referenced to section 3.3 of the plan, however, no information could be found in that section regarding covering coal and waste material. This information is addressed under sections 2.4 and 4.2 of the plan. In this section, the operator indicates that there are no coal processing wastes being generated at the site. The operator intends on blending coal, coal waste, and sediment pond waste into the coal for retail sale, or, in the event that the waste meets the criteria for disposal, it may be returned to the Soldier Canyon Mine's waste rock disposal site or returned to underground workings.

Compliance

No generation of acid-or toxic-forming materials is anticipated on the site. Refer to comments made under section UMC 817.48 regarding sampling requirements in order to determine whether or not materials are to be considered to be acid-or toxic-forming. With regard to return of the material to the Soldier Canyon Mine for disposal in the waste rock disposal site or underground, the operator will be required to notify the Division of the timing and the quantity of materials that will be shipped to the mine for disposal.

Stipulation UMC 817.103-(1) - JRH

1. Within 30 days of permit approval, the operator shall commit to notify the Division 30 days prior to transporting coal, coal waste, or sediment pond waste

to the Soldier Canyon Mine. The notification shall include the estimated quantity of material to be transported and the final location and disposition of the material for permanent disposal at the mine site.

UMC 817.106 Regrading or Stabilizing Rills and Gullies - JSL/JRH

Existing Environment and Applicant's Proposal

The erosion hazard and runoff associated with the soils at the Banning Loadout facility are rated moderate and medium, respectively. The applicant has committed in section 3.3 to fill, grade or otherwise stabilize and reseed any rills and gullies deeper than nine inches in accordance with the approved reclamation plan.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

UMC 817.111-117 Revegetation - LK

Existing Environment and Applicant's Proposal

The Banning Loadout facility is located within a Greasewood-Shadscale desert shrub association of the Upper Sonoran life zone. Vegetation information is included in the MRP as Chapter seven. Common vegetation species include, Shadscale (Atriplex confertifolia), Broom snakeweed (Gutierrezia sarothrae), Greasewood (Sarcobatus vermiculatus), Fringed sage (Artemisia frigida), Blue grama (Bouteloua gracilis), Indian ricegrass (Oryzopsis hymenoides), Bottlebrush squirreltail (Sitanion hystrix), Sand dropseed (Sporobolus cryptandrus), Prickly pear cactus (Opuntia polycanthus) as well as several weedy perennial forbs and annuals.

A reference area was selected in consultation with DOGM in 1987 to best typify the vegetation that existed prior to operations and for use in determining success of reclamation. The reference area is not within the permit area, however the applicant does have control over it. Quantitative data was collected for cover and shrub density, revealing a vegetation cover of 37% and a shrub density of 5942 plants per acre. Sample adequacy was met at the 80% confidence level and sampling methdology was approved by DOGM prior to sampling (pages 7-1 to 7-3). Productivity and range condition were estimated by the Soil Conservation Service in 1987 to be 800 lbs per acre and high fair condition respectively (General Correspondence, Item #11 following page 1-58 of Chapter 1). The location of the reference area is shown on Exhibit 6.2-1.

The applicant has proposed a revegetation plan (pages 3-7 to 3-16 and 7-16 to 7-20) to meet the proposed postmining land use of grazing and wildlife habitat.

Compliance

UMC 817.111 General Requirements - LK

The applicant has proposed a plan to revegetate all lands affected by the operations with the exception of the railroad and access road that will remain as part of the postmining land use with a diverse, effective, and permanent vegetative cover. The plan is designed to encourage a prompt vegetative cover and recovery of productivity levels compatible with the approved postmining land use.

The revegetation plan is in compliance with the requirements of this section.

UMC 817.112 Use of Introduced Species - LK

Yellow sweet clover (Melilotus officinalis) is the only introduced species proposed for revegetation (Table 7.2-5). This short-lived biennial plant is known for its soil stabilizing characteristics and is highly recommended for use in reclamation. It has been used on several sites and it has been demonstrated that it is non-persistant and is compatible with the plant and animal species of the region.

The proposed species for reclamation are in compliance with the requirements of this section.

817.113 Timing - LK

The applicant proposes to seed disturbed areas during the fall planting season prior to snowfall (page 3-8). Table 3.6-1 shows this to be mid-October through November.

Fall seeding has been determined to be the most favorable time for seeding most native species in Utah for optimum success.

The proposed timing for revegetation is in compliance with the requirements of this section.

817.114 Mulching and Other Soil Stabilizing Practices - LK

The applicant will mulch all seeded areas with 2000 lbs/acre of alfalfa or native grass hay. Mulch will be anchored by crimping the mulch into the soil with a disc. Precautions will be taken to assure that the mulch is free of noxious weed seeds (pages 3-7 and 3-8).

The proposed mulching plan is in compliance with the requirements of this section.

817.116 & 117 Standards For Success - LK

The applicant has established a reference area for making comparisons with revegetated areas to determine reclamation success. Comparisons for cover, productivity and woody plant density will be made during the last two years of a 10 year liability period. Success will be determined if the reclaimed area is at least 90% of the reference area for these parameters with a 90% statistical adequacy (Page 3-11).

The applicant has provided a monitoring program to assure that the reference area will remain in fair or better condition. Revegetated areas will also be monitored to demonstrate revegetation establishment is proceeding in an acceptable manner (Pages 3-11 to 3-14).

The applicant has proposed only qualitative measurements of the revegetation test plot. Without quantitative analysis the effectiveness of the plot cannot be determined. Stipulation UMC 817.116-(1) - LK will resolve this issue.

Stipulation UMC 817.116-(1) - LK

1. Within 30 days of permit approval, the operator will submit a quantitative monitoring plan for the test plot for review and approval. This plan must identify appropriate parameters to be sampled and the sampling schedule.

The proposed revegetation standards are in compliance with the requirements of this section.

Reclamation Feasibility - LK

The proposed revegetation plan has been evaluated to determine whether reclamation can be feasibly accomplished pursuant to UMC 786.19(b).

The plan incorporates seeding methods that are standard for the industry. The species selected are adapted to the site conditions and have been successfully used in similar sites.

Timing is scheduled to coincide to the season of seeding that is optimum for plant establishment.

All revegetated areas will be mulched using an acceptable material and at an adequate rate to assist in moisture retention and reduce erosion. Mulch will be anchored according to standard practices.

Revegetated areas will be monitored to detect any problems or problem areas that might occur so that they may be corrected at an early stage. In addition, the applicant has proposed a testplot (demonstration area) that will be implemented to provide site specific data to demonstrate the proposed plan is feasible. Therefore, a finding is made that reclamation, as required by the Act and the regulatory program, can be feasibly accomplished according to the proposed plan.

UMC 817.121-.126 Subsidence Control Plan - DD

Applicant's Proposal

Since this operation is a loadout, there will be no underground disturbance at the site.

Compliance

This section is not applicable.

Stipultions

None.

UMC 817.131-.132 Cessation of Operations - SCL

Existing Environment and Applicant's Proposal

The applicant has committed to notify DOGM within thirty days or as soon as it is known that the operation will be temporarily ceased for more than thirty days. The notice will include items required by rule UMC 817.131.

The applicant has submitted adequate plans for final reclamation of the site.

Compliance

The applicant's plan complies with the requirements of these sections.

Stipulations

None.

817.133 Postmining Land Use - LK

Existing Environment and Applicant's Proposal

The applicant has provided regional and local land use information and postmining land use plans in Chapter 3, page 3-1 and Chapter 9, pages 9-33 to 9-38.

The permit area has been zoned by Carbon County as M & G-1 which includes mining, railroads, roads, grazing and wildlife habitat. The Mud Springs Grazing Allotment (BLM) covers the permit area with the period of use being October 20 to June 10 (winter & spring grazing) (page 9-37).

Compliance

The applicant plans to restore the permit area to a condition capable of supporting the premining land use conditions for grazing & wildlife habitat. The railroad (Denver and Rio Grande Western) and the BLM access road through the permit area will remain (Pages 3-1 and 9-37).

A question regarding the final disposition of fences associated with the operations remains. This includes both the fence around the facilities as well as along the access road. It is recommended that the facilities fence remain at least until vegetation on reclaimed sites is well established. The road fence removal needs to be coordinated with the BLM and wildlife agencies since it may be beneficial for controlling grazing and wildlife movements in the vicinity. Once the fencing issue is resolved, compliance with UMC 817.133 will be achieved.

Stipulation UMC 817.133-(1) - LK

1. Within 90 days of permit approval, the applicant will provide DOGM with plans for the final disposition of fences associated with the facilities and haul road. Evidence showing coordination in developing the plan with the BLM and Utah Division of Wildlife Resources as well as acceptance by the BLM shall be included in the plan.

UMC 817.150-.156 Class I Roads - JRH

UMC 817.160-.166 Class II Roads - JRH

UMC 817.170-.176 Class III Roads - JRH

Existing Environment and Applicant's Proposal

Information regarding these sections of the regulations can be found in sections 2.2, and 3.1 - 3.3. The only road to the site is the access road from the highway. The road was constructed in accordance with BLM specifications in 1977-78. The operator resurfaced the road in 1988.

Compliance

This road is used for the transportation of coal throughout the life of the facilities and is considered to be a Class I Road. The location, grade and alignment of the road is

provided within the MRP. Culvert installation and drainage for the road was conducted under approval of the BLM during construction. The operator has committed to maintain and operate the road in accordance with the specifications required by the BLM and the performance standards of the Act.

The operator intends on leaving the access road as part of the post mining land use in accordance with BLM requirements. The configuration of the road will essentially be the same as currently exists and will allow access through the site upon completion of reclamation of the site.

The portion of the haul road which loops around for unloading will be removed and reclaimed in conjunction with the pad areas and the rest of the loadout facilities.

This section is considered to be complete and technically adequate.

Stipulations

None.

UMC 817.180 Other Transportation Facilities - JRH

Existing Environment and Applicant's Proposal

Information regarding this section of the regulations is found in section 2.2 of the MRP. A description of the facilities includes those existing facilities and proposed modifications to the facilities to increase the capacity of the loadout operations.

Compliance

Existing facilities to be used in conjunction with the proposed permit are described in comments made under UMC 817.181. Refer to this section regarding existing structures.

The loadout facilities are considered to be other transportation facilities. The location of these facilities is within the disturbed area as delineated by the operator. The proposed modifications to the existing facilities will also be within the disturbed area. This section is considered to be complete and technically adequate.

Stipulations

None.

UMC 817.181 Support Facilities and Utility Installations - JRH

Existing Environment and Applicant's Proposal

Existing facilities and related comments have been incorporated under this section of the regulations and include those related requirements of UMC 786.21. Information regarding existing structures is found in section 2.2 of the plan. A table of the structures and facilities found at Banning Loadout is provided in Table 2.2-1. This table indicates the date of construction, the type of construction, location and whether or not the structure meets the performance standard required under Subchapter K and UMC 786.21.

The operator plans to utilize all of the existing structures as outlined in Table 2.2-1 of the plan. The location of these facilities is found on Exhibit 2.1-1.

Compliance

All of the exiting facilities proposed to be utilized in the operation of the loadout facilities were constructed prior to the promulgation of the Act. The operator has committed that these structures will meet the performance requirements of subchapter K throughout the life of the operation. These existing structures and proposed modifications to these structures so as to increase the capacity of the facility to 6,000 tons per hour are considered to be in accordance with this section of the regulations and in accordance with UMC 786.21.

Utilities on the site consist of a power generator with buried power cables. Sewage is collected and disposed of off site in accordance with state and local regulations. Culinary water is brought into the site and stored in containers. The operator has maintained that all facilities and utilities will be constructed and maintained in a manner so that no significant harm to the environment, public health or safety will result from the use of these structures.

The operator is considered to be in compliance with the requirements of this section and this section is considered to be technically adequate.

Stipulations

None.

UMC 822 Alluvial Valley Floors - JSL

Existing Environment and Applicant's Proposal

Information concerning alluvial valley floors has been addressed in section 6.5 of the MRP. The permit area is located in undeveloped rangeland derived mainly from Mancos shale. This area consists primarily of alkali soils with non-agriculturally beneficial plant species. There are no designated alluvial valley floors in the permit area.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

UMC 823 Prime Farmlands - JSL

Existing Environment and Applicant's Proposal

Discussion referring to prime farmland can be found under sections 2.6, 3.1 and 6.4 of the MRP. The soil mapping unit TDA (Ravola) is in the aridic or torric moisture regime with no irrigation water available for agriculture activities. The Soil Conservation Service has determined that the proposed loadout area is not Prime Farmland (Item 12, General Correspondence).

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulation

None.

LETTERS OF CONCURRENCE

Soldier Creek Coal Company
Banning Loadout
ACT/007/034
Carbon County, Utah

File PRO/007/034 #2

State of Utah

Division of State History
(Utah State Historical Society)
Department of Community and Economic Development

Norman H. Bangerter
Governor
Max J. Evans
Director

300 Rio Grande
Salt Lake City, Utah 84101-1182

January 29, 1988

Susan C. Linner
Permit Supervisor/
Reclamation Biologist
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

RE: New Permit Application, Soldier Creek Coal Company, Banning Loadout, PRO/007/034, Carbon County, Utah

In Reply Please Refer to Case No. K680

Dear Ms Linner:

The Utah State Historic Preservation Office has received for comment the above referenced project. A review of the project area by our staff indicates that there are two sites within the project area. We concur that archeological site 42Cb 91 is not eligible for the National Register. With regards to the dugout in the project area, we would need more documentation, especially photographs, before we can comment on the eligibility of the project. However, we understand that both sites will be avoided and that there are no plans for development in that area. Therefore, we can concur that there will be no effect as a result of this project. However, if additional disturbance is done in the site areas, we would strongly urge additional documentation of the historic site.

The above is provided on request as outlined by 36 CFR 800 or Utah Code, Title 63-18-37. If you have questions or need additional assistance, please contact me at (801) 533-7039, or 533-6017.

Sincerely,

A. Kent Powell
Deputy State Historic
Preservation Officer

AKP:jrc:K680/5130V OR/NE

orig minepile
cc: L Braxton

United States Department of the Interior

FISH AND WILDLIFE SERVICE
FISH AND WILDLIFE ENHANCEMENT
UTAH STATE OFFICE
2078 ADMINISTRATION BUILDING
1745 WEST 1700 SOUTH
SALT LAKE CITY, UTAH 84104-5110

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

(FWE)

February 3, 1988

RECEIVED
FEB 08 1988

OIL, GAS & MINING

Diane Nielson, Director
Division of Oil, Gas and Mining
3 Triad Center Suite 350
Salt Lake City, Utah

Dear Ms. Nielson:

We have examined the permit application for Soldier Creek Coal Company, Banning Loadout, PRO/007/034, Carbon County, Utah provided by your letter of January 7, 1988.

Areas of wildlife concern to the Fish and Wildlife Service are adequately addressed and we find no need to provide any further comments.

Sincerely,

Robert S. Ruesink

Robert Ruesink
State Supervisor

File PRO/007/034 #3

State of Utah
OFFICE OF PLANNING AND BUDGET

Norman H. Bangerter
Governor
Dale C. Hatch, C.P.A.,J.D.
Director
Michael E. Christensen, Ph.D.
Deputy Director

116 State Capitol Building
Salt Lake City, Utah 84114
(801) 538-1027

September 15, 1988

Mr. Lowell Braxton
Division of Oil, Gas and Mining
3 Triad Center, Suite 350
355 West North Temple
Salt Lake City, Utah 84180-1203

SUBJECT: Soldier Creek Coal Company - 5 year permanent mining permit for the Banning Loadout, Carbon County
State Application Identifier #UT880805-010

Dear Mr. Braxton:

The Resource Development Coordinating Committee of the State of Utah has reviewed this proposed action. We have received no comments from potentially affected state agencies.

The Committee appreciates the opportunity of reviewing this document. Please address any other questions regarding this correspondence to Carolyn Wright (801) 538-1535.

Sincerely,

Michael E. Christensen

Michael E. Christensen
Deputy Director

MEC/jw

OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
RELATEDNESS REPORT

APPNO: ACT007018
STATE: UT
NAME: SOLDIER CREEK COAL CO

DATE: 27 SEP 88
TIME: 11:57:46
PAGE: 1

APPLICATION INFORMATION

ST	APPL #	MSHAID	PERMIT	PPERMIT	APPID
UT	ACT007018	4200077	ACT007018		060108

NAME: SOLDIER CREEK COAL CO
ADDR: PO BOX 1 PRICE UT 84501

****

****
* SYSTEM RECOMMENDATION FOR ACT007018 = ISSUE *
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BOND CALCULATION

Soldier Creek Coal Company
Banning Loadout
ACT/007/034
Carbon County, Utah

SOLDIER CREEK COAL COMPANY, BANNING SIDING LOAOUT - BOND COST ESTIMATE
ACT/007/034 - SEPTEMBER, 1988 - JRH

BREAKDOWN OF RECLAMATION ACTIVITIES

ITEM	JOB	MATERIAL	EQUIPMENT	ACRES	QUANTITY	UNITS	PROD.	UNITS	COST/UNIT	TOTAL COST
I.	DEMOLITION AND REMOVAL									
A.	COAL REMOVAL			15						
			CAT D8L		12100	YD3	302.5	YD3/HR	$129.54/HOUR	$5,181.68
			CAT 950B		12100	YD3	302.5	YD3/HR	$97.62/HOUR	$3,904.77
			40T TRAILER		80	HOURS	1		$64.68/HOUR	$5,174.09
			LABORER		80	HOURS	1		$23.65/HOUR	$1,892.00
			FOREMAN		40	HOURS	1		$33.65/HOUR	$1,346.00
SUBTOTAL A. COAL REMOVAL										$17,498.55
B.	STRUCTURES REMOVAL									
	CONVEYORS	STEEL			2225	YD3	1		$4.59/YD3	$10,212.75
	SILOS	STEEL			1785	YD3	1		$4.59/YD3	$8,193.15
	PLATE ARCHES/TUNNELS	STEEL			1450	YD3	1		$4.59/YD3	$6,655.50
	TANKS/GUARD RAILS/ETC	STEEL			330	YD3	1		$4.59/YD3	$1,514.70
	SILO FOOTERS/FOUNDATIONS	CONCRETE			100	YD3	1		$5.94/YD3	$594.00
	BUILDINGS	CONCRETE			170	YD3	1		$5.94/YD3	$1,009.80
	PADS/CONVEYOR FOOTERS	CONCRETE			110	YD3	1		$5.94/YD3	$653.40
	RECLAIM TUNNELS	CONCRETE			80	YD3	1		$5.94/YD3	$475.20
	CONCRETE DISPOSAL ON SITE				460	YDS	1		$5.10/YD3	$2,346.00
	ASPHALT REMOVAL/DISPOSAL				40000	FT2	1		$1.48/FT2	$59,200.00
	FENCING				3900	FT	1		$1.22/FT	$4,758.00
SUBTOTAL B. STRUCTURES REMOVAL										$95,612.50
SUBTOTAL I. DEMOLITION AND REMOVAL										$113,111.05

ITEM	JOB	MATERIAL	EQUIPMENT	ACRES	QUANTITY	UNITS	PROD.	UNITS	COST/UNIT	TOTAL COST
II.	BACKFILLING AND GRADING									
	BACKFILLING AND GRADING			21.4						
			CAT D8L/RIPPER		40	HOURS	1		$129.54/HOUR	$5,181.68
			CAT 950B		40	HOURS	1		$68.14/HOUR	$2,725.68
			LS-3400		40	HOURS	1		$86.80/HOUR	$3,472.09
			DEERE 410B		40	HOURS	1		$49.13/HOUR	$1,965.14
			10YD3 TRUCK		120	HOURS	1		$59.73/HOUR	$7,167.14
			LABORERS		80	HOURS	1		$23.65/HOUR	$1,892.00
			FOREMAN		40	HOURS	1		$33.65/HOUR	$1,346.00
SUBTOTAL II. BACKFILLING AND GRADING										$23,749.73
III.	TOPSOIL DISTRIBUTION AND REVEGETATION									
A.	TOPSOIL DISTRIBUTION			21.4						
	RIPPING		CAT D8L/RIPPER		21.4	ACRES	2.33	ACRES/HOUR	$129.54	$1,189.79
	SOIL ANALYSIS				21.4	ACRES	1	SAMPLE/ACRE	$100.00	$2,140.00
	DISCING		DEERE 301A		21.4	ACRES	3.33	ACRES/HOUR	$37.37	$240.15
SUBTOTAL A. TOPSOIL DISTRIBUTION										$3,569.94
B.	REVEGETTION			21.4						
	FERTILIZER				21.4	ACRES	0.025	ACRES/LB	$0.35/ACRE	$299.60
	SEED				21.4	ACRES	1		$275.00/ACRE	$5,885.00
	MULCH				21.4	ACRES	1	ACRES/TON	$140.00/TON	$2,996.00
	BROADCAST FERTILIZER				21.4	ACRES	3	ACRES/HOUR	$35.88/HOUR	$255.92
	HAND SEEDING				21.4	ACRES	2	ACRES/HOUR	$23.65/HOUR	$253.06
	DRILL SEEDING				21.4	ACRES	2	ACRES/HOUR	$39.08/HOUR	$418.15
	MULCHING				21.4	ACRES	2	ACRES/HOUR	$112.17/HOUR	$1,200.19
	CRIMPING				21.4	ACRES	2	ACRES/HOUR	$39.08/HOUR	$418.15
	FOREMAN				16	HOURS	1		$33.65/HOUR	$538.40
SUBTOTAL B. REVEGETATION										$12,264.46
SUBTOTAL III. TOPSOIL DISTRIBUTION AN REVEGETATION										$15,834.40

IV. MOBILIZATION AND DEMOILIZATION				
MOBILIZATION AN DEMOBILIZATION	1 LUM SUM	1	$10,000.00/LS	$10,000.00
SUBTOTAL IV. MOBILIZATION AND DEMOBILIZATION				$10,000.00
SUBTOTAL FOR ALL ACTIVITIES -				$162,695.17
10% MAINTENANCE AND MONITORING COSTS				$16,269.52
10% CONTINGENCY AND ENGINEERING COSTS				$17,896.47
SUBTOTAL IN 1988 DOLLARS				$196,861.16
SUBTOTAL WITH ESCALATION @ 2.3% /YR FOR 3 YEARS (1991 DOLLARS) -				$210,759.39
TOTAL BOND AMOUNT ESTIMATED TO THE NEAREST $1,000 IN 1991$ -				$211,000.00

III. UNIT COST REFERENCE FOR BOND ESTIMATE:

JOB	COST /UNIT	MEANS # OR REF.	
MISC. DEMOLITION & REMOVAL	$4.59 /YD3	2.20400100	$4.59 MISC
CONCRETE	$5.94 /YD3	2.20400050	$5.94 CONC
PAVEMENT	$1.48 /YD2	2.14501700	$1.48 PAVE
POWERLINES	$3.62 /FT	[OSM EST.]	$3.62 POWERLINE
FENCE REMOVAL	$1.22 /FT	2.14500700	$1.22 FENCE
GUARDRAIL REMOVAL	$4.45 /FT	2.14500800	$4.45 GUARDRAIL
OFF-SITE DISPOSAL	$8.80 /YD3	2.14505600	$8.80 DISP
ON-SITE DISPOSAL	$5.10 /YD3	2.14505500	$5.10 ONSITE
BROADCAST SEED COST	$550.00 /ACRE	[DOGM EST.]	$550.00 BROAD
DRILL SEED COST	$275.00 /ACRE	[DOGM EST.]	$275.00 DRILL
HYDRO MULCH	$140.00 /TON	[DOGM EST.]	$140.00 HAY
FERTILIZER	$0.35 /LB	[DOGM EST.]	$0.35 FERT
MULCH NETTING(INCL. LABOR)	$1,050.00 /ACRE	[DOGM EST.]	**********NET
SEEDLINGS INCL. LABOR	$2.25 /STEM	[DOGM EST.]	$2.50 SEEDLINGS
CUTTINGS INCL. LABOR	$1.50 /STEM	[DOGM EST.]	$1.50 CUTTINGS
SOIL ANALYSIS	$100.00 /SAMPLE	[DOGM EST.]	$100.00 SOIL
WATER ANALYSIS	$100.00 /SAMPLE	[DOGM EST.]	$100.00 WATER
RIPRAP MATERIALS	$22.00 /YD3	2.33600100	$22.00 RIPRAP

EQUIPMENT COSTS INCLUDING OPERATOR [BLUE BOOK EQPT. RATES; MEANS OPERATOR COSTS]:

EQUIPMENT	MONTHLY RATE	ADJ. RATE /HR	MAINT /HR	OPERATOR/HR	TOTAL COST/HR
D8 DOZER CAT D8L	$10,805.00	$61.39 /HR	$28.50 /HR	$28.65	$118.54
RIPPER ATTACHMENT	$1,540.00	$8.75 /HR	$2.25 /HR		$11.00
D6 DOZER CAT D6D	$5,920.00	$33.64 /HR	$13.70 /HR	$28.65	$75.99
BROADCAST SEEDER/FERTILIZER	$735.00	$4.18 /HR	$3.05 /HR	$28.65	$35.88
LOADER CAT. 950-B	$4,245.00	$24.12 /HR	$42.00 /HR	$31.50	$97.62
LOADER CAT. 955L	$4,865.00	$27.64 /HR	$11.85 /HR	$28.65	$68.14
LOADER CAT. 953	$4,710.00	$26.76 /HR	$11.65 /HR	$28.65	$67.06
12YD3 TRUCK	$3,155.00	$17.93 /HR	$16.55 /HR	$25.25	$59.73
FARM TRACTOR DEERE 301A	$945.00	$5.37 /HR	$3.35 /HR	$28.65	$37.37
DISC ATTACHMENT	$125.00	$0.71 /HR	$1.00 /HR		$1.71
DRILL ATTACHMENT	$125.00	$0.71 /HR	$1.00 /HR		$1.71
CRIMPER ATTACHMENT	$125.00	$0.71 /HR	$1.00 /HR		$1.71
LOADER BACKHOE DEERE 410B	$2,425.00	$13.78 /HR	$6.70 /HR	$28.65	$49.13
EXCAVATOR LINK-BELT LS-3400	$7,410.00	$42.10 /HR	$16.05 /HR	$28.65	$86.80
GROVE MODEL 68 CRANE	$5,230.00	$29.72 /HR	$12.75 /HR	$31.00	$73.47
TRACTOR-TRAILER 40TON CAP.	$4,475.00	$25.43 /HR	$15.00 /HR	$24.25	$64.68
MULCH BLOWER (W/3 LABORERS)	$1,235.00	$7.02 /HR	$5.55 /HR	$99.60	$112.17
HYDO SEEDER W/LABOR	$3,750.00	$21.31 /HR	$8.00 /HR	$70.95	$100.26
COMMON LABORER				$23.65	$23.65
FOREMAN				$33.65	$33.65
PICKUP	$575.00	$3.27 /HR	$3.70 /HR		$6.97